

Amendments to the Specification:

Please replace paragraph [0001] with the following amended paragraph:

[0001] This invention relates to a method to epitaxially grow a III-V nitride film, particularly $\text{Al}_x\text{Ga}_y\text{In}_z\text{N}$ ($x+y+z=1$) film on a given substrate ~~[[by]]~~ using a Metal Organic Chemical Vapor Deposition (MOCVD) method and an apparatus for the same method.

Please replace paragraph [0002] with the following amended paragraph:

[0002] In opto-electronic devices such as light-emitting diodes, laser diodes or photodiodes, it is proposed that III-V nitride films having their compositions of $\text{Al}_x\text{Ga}_y\text{In}_z\text{N}$ ($X+Y+Z=1$) ~~[[is]]~~ are epitaxially grown on a given substrate made of sapphire single crystal, for example. Up to now, the epitaxial growth of the $\text{Al}_x\text{Ga}_y\text{In}_z\text{N}$ film has been performed ~~[[by]]~~ using a MOCVD method or recently, a Hydride Vapor Phase Epitaxy (HVPE) method.

Please replace paragraph [0003] with the following amended paragraph:

[0003] In the case of making a GaN film ~~[[by]]~~ using a HVPE method, first of all, a substrate made of sapphire single crystal is set into a reactor in which a gallium metallic material is charged. Then, a hydrochloric acid gas is introduced into the reactor and reacted with the gallium metallic material, to generate a hydrochloric gallium gas. Then, an ammonia gas is introduced into the reactor and reacted with the hydrochloric gallium gas, to deposit and fabricate the GaN film on the substrate. The HVPE method has a higher film growth rate than a MOCVD method or a MOVPE method. For example, in the MOVPE method, a GaN film can be epitaxially grown typically at only several $\mu\text{m}/\text{hour}$, but in the HVPE method, the GaN film can be epitaxially grown typically at several hundreds $\mu\text{m}/\text{hour}$. Therefore, the HVPE method has its advantage in forming a thicker III-V nitride film.

Please replace paragraph [0004] with the following amended paragraph:

[0004] However, a good quality $\text{Al}_x\text{Ga}_y\text{In}_z\text{N}$ film can not be provided by the HVPE method, and the fluctuation in thickness on the same substrate may be increased. On the other hand, ~~it takes much time to form~~ forming the $\text{Al}_x\text{Ga}_y\text{In}_z\text{N}$ film ~~[[by]]~~ via the MOVPE method is a time consuming process, and thus, the fabrication cost of the $\text{Al}_x\text{Ga}_y\text{In}_z\text{N}$ film is relatively high ~~riser~~.

Please replace paragraph [0005] with the following amended paragraph:

[0005] In the case of making an $\text{Al}_x\text{Ga}_y\text{In}_z\text{N}$ ($x+y+z=1$) film [[by]] using a MOCVD method, a given substrate is set and held on a susceptor installed in a reactor, and is heated to a predetermined temperature by a heater. Then, a trimethylaluminum gas, a trimethylgallium gas, a trimethylindium gas or the like as III raw material gases are introduced with a carrier gas composed of a hydrogen gas or a nitrogen gas into the reactor. An ammonia gas as a V raw material gas is introduced with a carrier gas composed of a hydrogen gas or a nitrogen gas into the reactor. Then, the III raw material gases and the V raw material gas are reacted, to deposit and form the $\text{Al}_x\text{Ga}_y\text{In}_z\text{N}$ film on the substrate. As the $\text{Al}_x\text{Ga}_y\text{In}_z\text{N}$ film, an aluminum nitride film, a gallium nitride film, an indium nitride film, an aluminum-gallium nitride film, an aluminum-indium nitride film and a gallium-indium nitride film are exemplified.

Please replace the paragraph beginning at page 3, line 30, with the following amended paragraph:

It is an object of the present invention to work out the above conventional problems, and thus, to provide a method for epitaxially growing a good quality $\text{Al}_x\text{Ga}_y\text{In}_z\text{N}$ ($x+y+z=1$, $x \geq 0$, $y \geq 0$, $z \geq 0$) film at a higher film growth rate without the fluctuation in thickness [[by]] using a MOCVD method.

Please replace the paragraph [0014] with the following amended paragraph:

[0014] It is another object of the present invention to provide an apparatus for epitaxially growing a good quality $\text{Al}_x\text{Ga}_y\text{In}_z\text{N}$ ($x+y+z=1$, $x \geq 0$, $y \geq 0$, $z \geq 0$) film at a higher film growth rate without the fluctuation in thickness [[by]] via a MOCVD method.

Please replace paragraph [0019] with the following amended paragraph:

[0019] This invention also relates to an apparatus for fabricating a III-V nitride film [[by]] using a MOCVD method, including a reactor prepared horizontally, a susceptor to hold a substrate thereon installed in the reactor, a heater to heat the substrate to a predetermined temperature via the susceptor, and a cooling means to directly cool down at least the portion of the inner wall of the reactor opposite to the substrate.

Please replace paragraph [0024] with the following amended paragraph:

Description of the Preferred Embodiments --Detailed Description of the Invention--

[0024] Fig. 1 is a cross sectional view schematically showing a first embodiment of the fabricating apparatus of the present invention. In this embodiment, an AlN film is formed on a sapphire single crystal substrate. The fabricating apparatus depicted in Fig. 1 includes a reactor 11 set horizontally and made of quartz entirely, and a susceptor 13 substantially located at the almost center of the bottom wall of the reactor 11. Then, a heater 14 is provided under the susceptor 13. A sapphire single crystal substrate 12 is set and held on the susceptor 13 upwardly, and heated with the heater 14 to a given temperature via the susceptor 13. ~~By disposing the~~ The susceptor 13 ~~[[at]] can also be disposed on the top wall of the reactor 11, in which case the substrate 12 is set and held on the susceptor downwardly.~~

Please replace paragraph [0028] with the following amended paragraph:

[0028] Fig. 2 is a cross sectional view schematically showing a second embodiment of the fabricating apparatus of the present invention. The same reference numerals are given to the similar constituent portions to the ones depicted in Fig. 1. In this embodiment, ~~[[too]] similar to embodiment one discussed above,~~ the fabricating apparatus depicted in Fig. 2 includes a reactor 11 set horizontally and made of quartz entirely, and a susceptor 13 located at substantially the almost center of the bottom wall of the reactor 11. Then, a heater 14 is provided under the susceptor 13. A sapphire single crystal substrate 12 is set and held on the susceptor 13 upwardly, and heated with the heater 14 to a given temperature via the susceptor 13. Moreover, a cooling jacket 20 made of stainless steel and having a first cooling medium temperature-controlling instrument 21 and a pump 22 is provided at the outer side of the top wall of the reactor opposite to the substrate 12.

Please replace paragraph [0032] with the following amended paragraph:

[0032] Fig. 3 is a cross sectional view schematically showing a third embodiment of the fabricating apparatus of the present invention. The same reference numerals are given to the similar constituent portions to the ones depicted in Figs. 1 and 2, and ~~detail~~ detailed explanations for the similar constituent portions are omitted.